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08/913,518	11/04/97	DEBALME	J 1247-709-3VF

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EXAMINER
AFTERGUT, J

ART UNIT PAPER NUMBER
1733

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/913,518

Applicant(s)
DEBALME ET AL

Examiner
Jeff Aftergut

Group Art Unit
1733



- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire THREE month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-20 _____ is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-20 _____ is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claims _____ are subject to restriction or election requirement.

Application Papers

- ☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☒ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 6
- ☐ Interview Summary, PTO-413
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-6, 12, 16, 18, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor in view of any one of Kwok, Scott, or Hunter.

O'Connor teaches a process for the manufacture of a composite article which included the commingling of thermoplastic filaments and reinforcing filaments and the subsequent formation of a hybrid composite fabric from the same. Subsequent to the formation of the fabric (whether it is a non-woven fabric, i.e. a batt, or a weave) the composite fabric or batt was subjected to heat and pressure followed by cooling in order to form the composite material. More specifically, the applicant is referred to column 3, lines 34-61 for the contacting procedures which included: (1) the formation of a batt of commingled fibers by first intermingling the thermoplastic fiber and the reinforcing fiber followed by the cutting of the commingled fiber to produce a staple length commingled fiber and preparation of a composite batt lay up by laying up the staple fibers, and; (2) the formation of a fabric by commingling the thermoplastic and reinforcing filaments followed by the weaving of the commingled yarn into a composite fabric. The reference additionally taught that the composite fabric or composite batt was subjected to a treatment of heat and pressure for

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a sufficient time in order to effect complete contacting of the matrix (the thermoplastic fiber) with the reinforcing fiber, see column 4, lines 5-43. The reference also taught that the amount of reinforcement in the final product could lie within the range of 40-80% by weight, column 3, line 62-column 4, line 3. The reference taught all of the steps of applicant's claims, i.e. subsequent to the formation of the fabric or batt, the fabric or batt was subjected to heat and pressure in order to make the thermoplastic material flow. The reference, however, failed to teach that when one formed a batt, for example, that the batt would have been formed on a moving substrate (a conveyor). It should be noted that in the textile industry, the formation of a batt on a conveyor is taken as well known and conventional in the art as evidenced by any one of Hunter, Scott, or Kwok.

More specifically, each one of Hunter (column 3, line 64-column 4, line 30, conveying apparatus 70 onto which the batt was formed in a cross lapping operation), Scott (column 3, lines 41-47 where blended fibers of staple length were said to be fed to a cross lapper which cross lapped to form a batt on a conveyor or apron) or Kwok (conveyor 17 and cross lapping operation as described in Figure 3) suggested that those skilled in the art of forming batts would have understood that batts would have been formed on a conveyor belt. Such is evidence that those skilled in the art of forming a batt would have readily appreciated that a batt would have been formed on a conveyor. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ conventional batt forming techniques as suggested by any one of Hunter, Kwok, or Scott to form the batts of O'Connor.

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With regard to claim 3, note as addressed above the material was deposited onto a conveyor. Regarding claims 4 and 16, note that the reference to O'Connor taught that the reinforcing fiber and thermoplastic fibers would have suitably formed into a fabric subsequent to the commingling operation. Regarding claims 5 and 18, note that the reference to O'Connor suggested that the fibers were chopped in the formation of a batt. Regarding claims 6 and 20, note that in the formation of a fabric one would have employed continuous commingled fibers in the process of O'Connor. Regarding claim 12, note that O'Connor suggested the specified amount of reinforcement in the final composite article.

3. Claims 2, 7-11, 13-15, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 2 further in view of Vane.

The references as set forth above suggested that one would have formed a fabric from a combination of thermoplastic and reinforcing fibers where the same were fed through the device with a conveyor and subsequently subjected to heat and pressure. The references fail to describe the formation plural layers of the composite material whereby one layer is formed upon another layer and the assembly was fed through the device for forming the composite article (where heat and pressure was applied). It, however, was known at the time the invention was made to form plural fabric layers from commingled fibers and feed the same to a device which applied heat and pressure to the same to melt the thermoplastic fibers in the commingled fibers as evidenced by Vane. Vane suggested that those skilled in the art would have formed a composite laminate from a plurality of layers of commingled fibers where one layer of the commingled fibers was laid upon

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the other to form the multi layer assembly. The applicant is referred to Figure 1 where a thermoplastic fiber 13 are commingled with reinforcing fibers 10 via device 20 and the same was deposited to form a fabric layer, for example layer 6. Plural layers 1-6 are assembled one onto the other. Subsequent to the assembly, the layers are subjected to a molding operation where the same were subjected to heat and pressure. Clearly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to lay up a plurality of layers of commingled fibers one onto the other (note that in Vane the thermoplastic films 8 which were laid down need not be deposited upon the laid fabric layers but instead were added as additional thermoplastic matrix material). It would have been obvious to one of ordinary skill in the art at the time the invention was made to build up a composite fabric by depositing plural fiber layers one onto the other in order to form a multi layer assembly whereby the fabric layers were each formed from commingled fibers as suggested by Vane wherein the commingled fiber layers would have included batts or fabric layers as suggested by O'Connor in the process for making a composite fabric as taught above in paragraph 2.

With regard to claim 2, the reference to Vane clearly suggested that the layers would have been formed one upon the other. Regarding claims 7-11, the applicant is advised that the reference to O'Connor suggested that those skilled in the art would have understood that a reinforcing fabric or a batt (a non-woven of commingled fibers) would have been understood as alternative fabrics formed from the commingled fibers. The applicant is advised that those skilled in the art would have determined, based upon the desired characteristics of the final product, what

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kinds of fabric materials would have been formed (and what the orientation of the fibers in the layers would have been in the assembly). It would have been within the purview of the ordinary artisan to substitute a nonwoven layer (or batt) for a fabric layer in Vane and the particular lay up of the layers would have certainly been within the purview of the ordinary artisan depending upon the desired final characteristics of the final composite product. Regarding claims 13-14, the applicant is advised that the reference to O'Connor suggested that one would have employed a chopping device in the device. Additionally, applicant is advised that those skilled in the art of laying up multi layer assemblies would have readily appreciated that the fabrics would have been deposited from rolls of material and to supply a continuous supply of fabric one would have readily understood that at least two rolls of the same would have been supplied in order to provide for a continuous supply of the fabric (i.e. when one roll was deposited that one would have known to start the supply of the next roll while the first roll was being replaced).

Additionally, the use of a double band press to press together layers in the formation of a composite is conventional in the art. Regarding claims 15, 17, and 20, the applicant is advised that those skilled in the art would have readily appreciated that the continuous fibers or chopped fibers would have been useful in the formation of the composite fabrics in light of the teachings of O'Connor.

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Claim Rejections - 35 USC § 112

4. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 1, the language “the manufacture” lacks proper antecedent basis because no “manufacture” has been previously described. The applicant is advised to change “the manufacture” to --manufacturing--. In claim 1, line 2, the language “the association” lacks proper antecedent basis because no “association” has been previously defined. It is suggested that the language “the association of” be changed to --associating--. In claim 1, lines 3-4, the language “the filamentary state” lacks proper antecedent basis. It is suggested that the word “the” be changed to --a--. In claim 1, lines 9-10, the language “the quantity” lacks proper antecedent basis because no “quantity” has been previously defined. It is suggested that “the” be changed to --a--. In claim 1, line 12, it is suggested that “the form” be changed to --a form-- in order to provide proper antecedent basis for the claimed language. In claim 1, line 18, “the form” should be changed to --a form-- in order to provide proper antecedent basis for the claimed language.

In claims 4 and 7, the applicant recited the language “of fabric and/or of knit” which is not clear and concise. The strips are either of a knit material or they are of a fabric material (they cannot be both, here the term fabric is taken to mean a weave). Note that there are such things as knitted fabrics but the exact scope of the language “of fabric and/or of knit” is unclear due to the alternate language presented by applicant. Correction is required.

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Regarding claims 7-10, the applicant has used the language "sheet(s)" and/or strip(s) throughout the claims. The applicant is advised that such language should be changed to --at least one sheet-- or --at least one strip--, respectively in order to avoid any confusion.

In claim 8, the last line of the claim, the language "the exit" appears which lacks proper antecedent basis because no "exit" has been previously defined. It is suggested that "the" be changed to --an--. A similar change needs to be made in both of claims 9 and 10.

Claims 13 and 14 are indefinite because one cannot have an apparatus claim which depends upon a method. In other words, if applicant intended these claims to be apparatus claims the applicant should rewrite the claims in independent form where they are independent apparatus claims. Applicant is advised that as presented it cannot be determined to what extent the apparatus further limited the methods from which these claims depend and the exact scope of these claims cannot be ascertained.


Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.K. 1,200,342 taught a method of forming a batt from commingled fibers of thermoplastic and reinforcing fibers.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Aftergut whose telephone number is (703) 308-2069.

JHA
November 16, 1998


JEFF AFTERGUT
PRIMARY EXAMINER
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